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ASSISTANT SECRETARY OF DEFENSE
WASHINGTON 25, D. C.

May 30, 1963

Dear Mac:

Enclosed is a memorandum taking a look at the 'missile gap' from a somewhat different perspective than the memoranda on the same subject which you sent to me sometime ago. I am not sure that it really meets the questions you had in mind. Let's talk about it when you have a moment.

I am also returning herewith the memoranda on this subject which you sent to me.

Sincerely,

Paul

Paul H Nitze

Honorable McGeorge Bundy
Special Assistant to the President
for National Security Affairs

Enclosures
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ASSISTANT SECRETARY OF DEFENSE
WASHINGTON 25, D.C.

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INTERNATIONAL SECURITY AFFAIRS

31 May 1963

MEMORANDUM FOR MR. NITZE

SUBJECT: But Where Did the Missile Gap Go?

The "missile gap" occupied a prominent place in public and private debates over national security and defense posture from about 1957 to 1961. In February of 1961, shortly after assuming office, Secretary of Defense Robert McNamara declared that the missile gap no longer exists. What was meant by the phrase "missile gap"? Did it ever really exist? If so, has it now disappeared? These are legitimate questions which merit answers in both classified and unclassified forms.

Definition

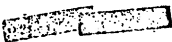
The core of the problem rests on a correct definition of "missile gap". The term has been used loosely and in differing senses by many people. However, it should be established at the outset that the

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term is not adequately described by a comparison of the number of Soviet and U.S. ICBMs in being or expected to be in being at any given time. This is an important ingredient but not, of itself, sufficiently comprehensive. Asymmetries in numbers of ICBM missiles do not necessarily lead to asymmetries of power or vulnerability. What is the meaning of Soviet ICBMs in light of U.S. defense vulnerabilities? An understanding of the sense in which the "missile gap" reflected a serious phenomenon requires an appreciation of the context in which it arose.

In the early 1950's, it became evident that our overseas strategic bases were becoming highly vulnerable to Soviet bomber attacks with nuclear weapons, and also that our U.S. based force was not automatically invulnerable.

By 1956, a possibility (perhaps even a probability) existed that, starting in late 1959 or early 1960 and continuing through 1962, there would be a "critical period" during which the U.S. might be vulnerable to a substantially disarming, no warning, Soviet nuclear

TOP SECRET

attack, spearheaded by ICBMs. This judgment rested on two basic assumptions. First, it assumed that the U.S. would not (as recommended in 1956 by RAND and others and in 1957 by the Gaither Committee) change its then existing pattern of defense plans and expenditures so as to be better prepared to meet the potential threat. Second, it assumed (on the basis of the best intelligence then available) that the Soviets had the ability -- and would decide -- to achieve a significant ICBM delivery capability with megaton warheads by 1959. The characteristics and effects of the critical period, based on such assumptions, were set out in the Gaither Report, as follows:*

"Period B -- (starting 1959/early 1960 -- ending 1961/1962)

"Characteristics

1. The USSR will probably achieve a significant ICBM delivery capability with megaton warheads by 1959.
2. U.S. will probably not have achieved such a capability.
3. U.S. will probably not have achieved either an early warning of or defense against an ICBM attack.
4. SAC will have increased modestly its number of operational bases, but none will be hardened.

* "Deterrence & Survival in the Nuclear Age" (Gaither Report), November 7, 1957, p. 15.

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5. Rapid increase in USSR stockpile of fissionable material and in weapons technology will substantially increase megaton load that can be delivered by manned bombers in the U.S.

6. In spite of continuing additions to our continental defense net, the attrition imposed on a manned bomber attack at low altitude and/or with electronic countermeasures will probably destroy only a small portion of the attacking force.

"Effects

1. SAC could be completely vulnerable to an ICBM attack directly against its bases and weapons stockpile.

2. If the USSR were successful in a missile disarming attack against SAC bases, manned bombers could then deliver a decisive attack against the U.S.

3. This appears to be a very critical period for the U.S."

In addition, other studies of U.S. vulnerabilities to sneak or surprise attacks conceived of ways and circumstances in which with bombers alone it might be possible for a Soviet nuclear strike substantially to destroy U.S. retaliatory capabilities.

Validity

Viewed in the light of the information available in 1957 and the next few years, the missile gap was very serious indeed. Of course, as we get closer to the "critical period", the initial assumptions about the U.S. force posture could be replaced by actual events and by better forecasts. The initial assumptions about Soviet defense

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accomplishments could also be modified to reflect more recent intelligence estimates. The wide spectrum of possibilities thereby became narrower as time went by. The Soviet advantage was foreseen to rest, first, on the Soviet ICBM capability expected for the critical period, and, second, on the vulnerability of the U.S. strategic system at that time to a massive missile attack without warning.

A. Validity of Assumptions about Soviet Operational ICBM Deployments

It seems useful to begin by establishing a standard as to the U.S. aiming points which a Soviet ICBM strike would have to destroy in order to reduce U.S. retaliatory power located in the United States to a small or comparatively negligible level. The following chart^{*} gives a representative picture of the aiming points which would be of interest to the Soviets as seen in 1959; but a substantially disarming attack could have been accomplished without destroying all of the targets listed on the chart.

* NIE 11-8-59; 9 February 1960

Type of Target

No. of Aiming Points

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
Unhardened ICBM site	3	9	9	9
Semihardened ICBM site	0	9	36	36
Hardened ICBM site	0	3	33	90
SAC Operational bases	55	63	63	63
Naval Bases	10	10	10	10
C&C installations	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
TOTALS	72	98	155	212

The same NIE estimates the statistical level of assurance for the Soviets of inflicting severe damage on SAC operational bases in mid-1961 as follows:

	<u>Using Best Soviet Missile</u>	<u>Using Worst Soviet Missile</u>
200 BM on launcher	95%	70%
140 BM on launcher	85%	55%

An even more threatening situation seemed possible abroad. The number of Soviet intermediate range missiles able to do a high level of damage on our overseas bases was comparable to the number of ICBMs needed for a similar result against continental U.S. bases. Of course, the foregoing only applies to the bases themselves. The

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degree of surprise, precision, and state of alert would affect the number of bombers destroyed. The foreseeable advent of hardened and semi-hardened U.S. missiles would disproportionately increase the number of Soviet missiles required for such high probabilities of destroying the bulk of the U.S. strike force. The foreseeable advent of Polaris and other mobile systems would negate any hope of a 100% effective Soviet disarming strike. These events, plus early warning and higher alerts to assure survivability, would mark the end of the "critical period" for U.S. strategic defense -- the end of the missile gap. The pace of changes in U.S. defense posture will be discussed below, but the 1959 figures on aiming points represent the criteria used by the intelligence community at the time in its judgments as to the vulnerabilities of major installations of U.S. strike forces and, therefore, a possible force goal which the Soviets might establish for themselves.

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The other half of the missile gap picture as seen from the late 1950s was our estimate of the rate of development and deployment of operational Soviet ICBMs. The 1957 NIE estimates^(*) were that the Soviets had already tested an ICBM and might have about 10 prototype ICBMs available for operational use in 1959 or possibly earlier, depending upon Soviet requirements for accuracy and reliability. They could have 500 operational ICBMs before the end of 1962, or, on a crash basis, by the end of 1961. It was also surmised that the Soviets could probably produce about 20 nuclear powered submarines by mid-1962 and have a total of 50 submarines equipped with guided missile armament.

In December 1958,^(**) the intelligence community believed the Soviets intended to acquire a sizeable ICBM operational capability at the earliest practicable date. They pointed out the absence of sufficient evidence to judge the magnitude and pace of the Soviet

* NIE 11-4-57; 12 November 1957.

** NIE 11-4-58; 23 December 1958.

TOP SECRET

program to produce and deploy ICBMs. Based on indirect evidence -- production capacity and capacity to construct launch facilities, establish logistic lines, and train operational units -- they believed that the Soviets "could achieve an operational capability with 500 ICBMs about three years after the first operational capability date". Since that date was expected in 1959, this meant that the 500 ICBMs could be achieved by 1962. The estimate, however, added that the 500 ICBMs might be achievable in 1961 (a) if the Soviets should give the program an overriding priority, and (b) if they were also to meet with exceptional success in their test and production program. At the pace of 500 by 1962, they estimated that 100 ICBMs would be ready in a year and a half; at the accelerated pace, the 100 would be ready in about a year, i.e., 1959. These successes, it was pointed out, would require a high order of planning and accomplishment and an increased rate of test firings and training. The quality of the initial Soviet ICBM was reckoned as follows: Range 5500 nm; CEP 5 nm; reliability after launch 50%; payload between 2000 and 5000 lbs.

TOP SECRET

The December 1958 NIE adjudged that if the Soviets should decide on a general war, they would initiate it by nuclear strikes to destroy or neutralize Western retaliatory capability -- or at least to cut down on the size of a Western force to be met by Soviet air defense. This strategy, coupled with the estimated Soviet ICBM capabilities and the vulnerability of the U.S. strike force presented an understandably bleak picture, fully justifying the fears of a "missile gap".

The annual NIE for 1959 was not issued until February of 1960,^(*) at which time the evidence failed to sustain the earlier high estimates of the pace of the Soviet ICBM development. The Soviets had not, apparently, chosen to exploit the potentialities which might be achieved through the foregoing combination of factors. We estimated, nevertheless, that the Soviets might have 140-200 ICBM missiles on launchers^(**) by mid-1961 and (more tentatively) 250-350 by mid-1962,

* NIE 11-4-59; 9 February 1960.

** This NIE uses "ICBMs on launchers", instead of inventory, for the first time. The shift reflected the belief that the Soviets had acquired an initial operational capability and that henceforth deployment of operational launchers would be the most useful measure of salvo capability. The Army and Navy believed the number of Soviet ICBMs would be on the low side of the ranges given; the State Dept., the Air Force and Joint Staff believed it to be toward the high side.

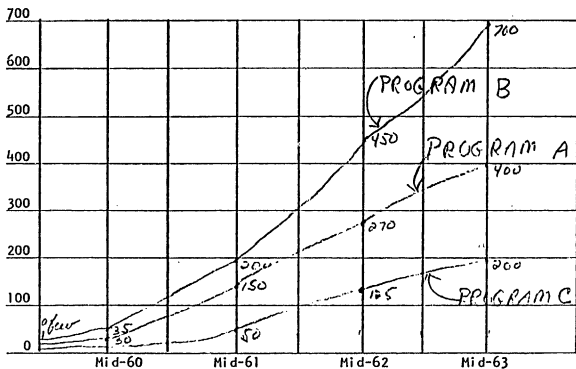
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and 350-450 by mid-1963. Though smaller than earlier estimates, these left open the possibility of an effective Soviet missile attack destroying our vulnerable SAC bases, particularly since we believed that improvements in the accuracy, reliability and CEP of Soviet ICBMs had sharply reduced the number required to attack our target system effectively. The intelligence community did not have evidence of Soviet plans for production and operational deployment of ICBMs and it judged (a) that the Soviets were not carrying out such a program on a crash basis, (b) that the probable Soviet objective was to provide a substantial deterrent and pre-emptive attack capability, and (c) that the Soviets believed they could devastate the U.S. with a long-range attack but not thereby prevent the nuclear devastation of the USSR.

In August of 1960^(*) the judgments of the intelligence community on the Soviet ICBM capability were still based on insufficient direct evidence. The range of estimates is illustrated by the following chart:

* NIE 11-4-60; 16 August 1960 and NIE 11-8-60; 1 August 1960.



TOP SECRET

Program B was adjudged to provide the Soviet Union with high assurance of being able to damage severely most of the SAC operational bases in an initial salvo by about mid-1961. By late 1961, Program A would reach a similar point. The judgments as to the probable Soviet program varied as follows: CIA, Program A; Air Force, Program B; State, DOD and Joint Staff, between A and B but towards the high side; Army and Navy, Program C. The estimates of the number of Soviet ICBMs required to give Soviet planners a theoretical capability of inflicting, in an initial salvo, severe damage on all of (1) 90% of the SAC base system over 1,100 N.M. from the USSR, (2) unhardened, semihardened, and hardened U.S. ICBM sites, and (3) command installations to the target system, were as follows:

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
Best missile characteristics	270	440	1,200	3,900
Worst missile characteristics	590	980	2,600	7,600

For less comprehensive target systems, many fewer would have been needed, e.g., 140 of the "best" and 190 of the "worst" Soviet missiles were reckoned to be capable of getting 90% of the SAC bases in mid-1963. (*)

* NIE 11-8-60; 1 August 1960.

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Intelligence estimates of the expected numbers of Soviet ICBMs had not changed by December 1960, (*) but the NIE, like its immediate predecessors, concludes (a) that the Soviets did not appear to believe that a rapid expansion of ICBMs would permit them to attack the U.S. with assurance of victory or without grave danger to their own regime and (b) that they regarded the ICBM primarily as a deterrent and for pre-emptive or retaliatory attack and for a weapon of political pressure. The dangers of the "missile gap" as seen in 1957 were fading fast as the "critical period" began to pass from the future into the present.

In April 1961, (**) available intelligence evidence was inconclusive as to the precise timing of initial Soviet ICBM deployments, though January 1960 seemed probable. It, furthermore, seemed that the Soviets may have preferred to develop a second generation ICBM before large-scale production or deployment of ICBMs.

By June 1961, the world was in the middle of the "critical period" as foreseen in 1957. Mr. McNamara had already declared that the missile

* NIE 11-4-60; 1 December 1960.

** NIE 11-5-61; 25 April 1961

TOP SECRET

gap no longer existed. Though we were still uncertain about the number of Soviet ICBMs, it was clear (a) that the Soviets had not made the choices and taken the actions since 1957 which would have produced for them the best possible strategic relationship vis-a-vis the United States for the critical period, and (b) that, as outlined in the next section of this memorandum, the U.S. retaliatory forces had achieved a greater degree of survivability than it seemed wise to expect in 1957. Surveying the existing situation and peering into the future, the intelligence community's June 1961 judgment was that the Soviets might already have 50 to 100 operational ICBM launchers and, thereby, the ability to bring all SAC operational air bases under attack by missiles alone at mid-1961, and they would have 100-200 operational launchers within the next year and, therefore, would almost certainly be able to do so then. (*)

The Soviet ICBM program, it appeared, had proceeded at a deliberate rather than an extremely urgent pace.

The same intelligence estimate speculated on future programming decisions by the Soviet Union and their implications for Soviet strategy.

* NIE 11-8-61; 7 June 1961. The Army and the Navy estimated "no more than a few" in mid-1961. Director I&R, State, estimated that Soviets could have 200 operational ICBM launchers in mid-1961.

TOP SECRET

TOP SECRET

If the Soviets programmed ICBM launchers in the low hundreds, they would have the capability to devastate cities and also to inflict severe damage on SAC air bases and other suitable military targets. It would take several thousand ICBM missiles, with the accuracy and warheads then estimated, to achieve a reasonable assurance of inflicting severe damage on the total number of hard ICBM sites planned by the U.S. for the period beginning in 1963. The estimate was that the Soviets would program several hundred ICBM launchers within the next few years.

By September of 1961,* a critical Intelligence break-through had come and the official estimate of Soviet ICBMs on launchers turned out to be a meager 10-25, with no marked increase considered likely during the immediately succeeding months. By mid-1963, the expected number of Soviet ICBMs was 75-125. The Soviets had apparently chosen to deploy only a small number of first generation of ICBMs and to concentrate their efforts on developing a smaller, second generation system for deployment, probably in 1962.

* NIE 11-8/1-61; 21 September 1961 and TS0037218; 10 January 1962. Air Force estimated 50 ICBMs on launchers in mid-1961; 100 in mid-1962; and 250 in mid-1963.

TOP SECRET

In short, the potential Soviet operational ICBMs in the 1959-1962 "critical period" turned out to be different than foreseen in the late 1950s. In retrospect, the differences between the potential Soviet posture during the "critical period" as foreseen in the late 1950s and the actual posture when the "critical period" arrived rest on the following factors:

(a) The intelligence community had to make judgments based on inadequate or incomplete evidence. In 1958, for example, they extrapolated from what could be known about Soviet capacity to produce missiles, construct facilities, establish logistic lines and train troops. In August 1960, this indirect evidence included "the strategic ideas which appear to govern Soviet military policy".* In June 1961, the major bases for the estimate included "our sense of the tempo of the program and our judgment as to the relationship between what we have detected and what we are likely to have missed".

(b) The Soviets did not institute a full crash ICBM program, as they might have. Moreover, they did not produce and deploy their

* NIE 11-8-60; 1 August 1960.

TOP SECRET

first generation ICBM on any meaningful scale as they might have, but waited for an improved version.

(c) The Soviets, by choosing to build more IRBM and MRBM missiles than we predicted, thereby used resources which might otherwise have contributed to an ICBM build-up. This choice followed the same pattern as the Soviet choice of not giving as high a priority in the mid-1950s to procurement of long-range bombers as our intelligence community had expected.

Although information now available shows that the Soviet ICBM program has developed differently than it might have, the evidence still does not establish the reasons with certainty. There are indications, however, that these reasons included both technical and strategic elements. In deploying their first generation ICBM, the Soviets evidently encountered some sticky technical problems, which would have slowed down the program even if full resources had been allocated to it. Probably they also decided not to allocate a great proportion of resources to their first generation system. In addition, Soviet military doctrine through the late 1950s evidently regarded Europe as the primary theater and Soviet

military procurement reflected this philosophy. In this respect, Soviet choices regarding the allocation of effort among competing defense needs seem to have been inadequately foreseen in the U.S. intelligence estimates.

B. Validity of Assumptions About the U.S. Defense Posture

The other half of the "missile gap" -- the expected vulnerability of the U.S. strategic nuclear force as of the "critical period" -- also turned out differently than it seemed from the perspective of the latter half of the 1950's. In part, the hue and cry over the potential gap led us to make defense decisions to forestall it; but this was only one element sparking the series of upward adjustments in our defense posture, many of which were already in process by the time the 1957 Gaither Report was issued. The significant actions bearing on the missile gap concerned the survivability of our retaliatory forces. Quite a number of important changes in alert, warning, dispersal, hardening and mobility of our forces transpired before the "critical period". (*)

* The bulk of the data from which the following descriptions of the changing defense posture in the late 1950's is drawn comes from the Executive Branch Comments and Recommendations on the Gaither Report, NSC 5724/1, December 16, 1957, and from Secretary McNamara's Statement before the Senate Committee on Armed Services, April 4, 1961.

TOP SECRET

In July 1957, SAC ground alert was inaugurated. The standard was "as soon as possible" but not to exceed 30 minutes overseas or one hour in the U.S. SAC formally recognized the need for an alert status of about 15 minutes when the Soviets have an ICBM offensive capability and plans called for about 320 bombers on 15 minute alert by July 1960 and about 465 by July 1961. One-third of SAC achieved 15 minute ground alert status by August 1960. In April 1961 this was increased to one-half, and SAC continued to maintain a capability for an airborne alert of one-eighth of the bomber force when necessary.

Construction of the DEW line had begun in 1955 and parts of it were becoming operational starting in 1957. Authorization to build the three-station BMEWs was given in January 1958. The Thule station achieved initial operational capability in September 1960; the Clear, Alaska station in June 1961; and Flyingdale, England is expected in December of this year.

The 1957 ICBM programs called for 10 Atlas missiles by July 1959, 40 Titan missiles by July 1962 and 90 Atlas missiles by the end of FY 1963. The initial missile bases would not be hardened, though later bases would be. Development of the Minuteman was authorized in February of 1958 and approval was given in April 1960 to an initial force goal

TOP SECRET

of 150 by July 1963. In March of 1961 this goal was changed to 600 fixed Minuteman missiles by June 1964, and actions were instituted for doubling Minuteman production capacity. Clearly the pace of the U.S. missile programs had been moved forward substantially, but the impact in terms of ready operational missiles -- particularly those at hardened sites -- only began to be significant in 1962, the last year of the predicted "critical period". The following chart sets forth U.S. operational ICBMs in the "critical period" (and in 1963) as it turned out in fact:

<u>Operational ICBMs</u>				
<u>December</u>	<u>Atlas</u>	<u>Titan</u>	<u>Minuteman</u>	<u>Totals</u>
1959	2*			2
1960	5*			5
1961	25 25**			25 25**
1962	96 36**	42 14**	5 31**	143 81**
1963 (April) (April)	67 63**	20 39**	44 51**	131 153**

* Extent of alert varied; first missile became operational 1 September 1959.

** Missile can be fired, but in excess of established reaction time.

TOP SECRET

The 1957 view of the Polaris program reflected breakthroughs which led to predictions that the first submarine could be completed by October 1960, a second by February 1961, and a third by June 1961 -- 14 months, 23 months and 24 months ahead of the respective dates expected in the earlier years of the program. The first three Polaris submarines, armed with 16 missiles each, actually went on station in 1961, and the scheduled pace of Polaris construction was radically speeded up starting with the presentation of the Defense budget of 1961.

Each of these programs illustrates a crescendo of decisions and actions with the cumulative effect of downgrading to zero the possibility of a substantial clean-out of U.S. retaliatory capability by a Soviet nuclear attack spearheaded by ICBMs -- even if they had had the numbers of missiles we expected. The turning point for the "disappearance of the missile gap" is hard to fix. At no time did it appear to be a present reality, even based on the incorrect estimates of Soviet capabilities. It would be fair to say that the decline in its probability had a significant boost in 1961 with the increase in

TOP SECRET

TOP SECRET

the 15 minute ground alert, the increase in operational warning systems, increases in numbers of operational missiles, and the institution of Polaris submarines on-station.

Conclusions

The missile gap turned out to be a dud, but only when looked at from the vantage point of history. From the policy maker's point of view, the judgments in the NIEs available to him were the proper measures of the Soviet half of the defense balance. For the intelligence community, the philosophical problem arose, almost from the beginning, of whether or not it would be permissible in a national security matter of such grave consequences to deal only with probable Soviet actions. Even so, the alarm of the missile gap had meaning on the basis of intelligence data then available. But if it is appropriate to allow for a wide range of possibilities when there is a dearth of evidence on which to base the required estimates, the alarm was amply justified. In the light of the circumstances as they looked during the period of the late 1950's, the missile gap was a serious phenomena

TOP SECRET

calling for significant shifts in our defense posture to decrease U.S. vulnerability.

Mr. McNamara's judgment in early 1961 that there was no longer a missile gap can be fully supported by (a) the downward revisions -- even before the major intelligence break-through later in the year -- in estimates of Soviet ICBM capabilities, plus (b) improvements in U.S. defense posture over the expectations as they appeared in 1957, plus (c) the decision to go promptly to an increased degree of ground alert for SAC bombers. The exact moment when the potentiality of the missile gap ceased to be meaningful, however, is understandably hard to fix, in view of the dynamic character of the factors affecting it.

In sum, based on the best available judgments, the missile gap did exist as a possible future phenomenon in the "critical period". This possibility justified concern and called for counteracting measures. We have now passed through the critical period. During it, the Soviet

TOP SECRET

TOP SECRET

Union military posture, and our own, each turned out to be different than foreseen. But the phenomenon of the missile gap and its disappearance were understandable and legitimate in the light of the facts as seen at the relevant time.

Lawrence C. McQuade

Lawrence C. McQuade
Special Assistant

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APPENDIX

OPERATIONAL SOVIET ICBM LAUNCHERS

Full Range of Estimates by USIB Members^{a/}

<u>Date of Estimate</u>	<u>Mid-1962</u>	<u>Mid-1963</u>	<u>Mid-1964</u>	<u>Mid-1967</u>
February 1960	250-500	350-800	--	--
August 1960	125-450	200-700	--	--
December 1960	125-450	200-700	-- ^{b/}	--
June 1961	50-300	100-550	150-850	-- ^{c/}
September 1961	25-100	75-250	--	--
November 1961 ^{d/}				
January 1962	35-100	100-250	--	--
July 1962	50-100	100-250	150-450	250-800
February 1963 ^{e/}	--	120-250	175-450	--

- ^{a/} As a general rule, in NIEs throughout this period, the lowest numbers have been submitted by the Assistant Chief of Staff for Intelligence, Department of the Army, and the highest by the Assistant Chief of Staff, Intelligence, USAF.
- ^{b/} The Assistant Chief of Staff, Intelligence, USAF, estimated Soviet operational ICBM launchers at 950 in 1964 and 1,200 in 1965.
- ^{c/} The Assistant Chief of Staff, Intelligence, USAF, estimated Soviet operational ICBM launchers at 1,150 in 1965 and 1,450 in 1966.
- ^{d/} Not an NIE. The November 1961 figures appear in USIB-approved Intelligence Assumptions for Planning, submitted in response to a requirement of the JCS. For purposes of these assumptions, USIB members did not submit dissenting numerical estimates. Numbers are therefore not shown in this table.
- ^{e/} For end of 1962, 80-160.
- ^{f/} Though not restricted to ICBMs on launchers (in 1957 and 1958), the following estimates add perspective to the table above:

	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>
November 1957	10	N.A.	500*	500
December 1958	10	100*	500*	500
February 1960	--	--	140-200	250-350

*On a crash basis with overriding priority.